Aggregated wind power plant models consisting of IEC wind turbine models - DTU Orbit (09/11/2017)

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The common practice regarding the modelling of large generation components has been to make use of models representing the performance of the individual components with a required level of accuracy and details. Owing to the rapid increase of wind power plants comprising large number of wind turbines, parameters and models to represent each individual wind turbine in detail makes it necessary to develop aggregated wind power plant models considering the simulation time for power system stability studies. In this paper, aggregated wind power plant models consisting of the IEC 61400-27 variable speed wind turbine models (type 3 and type 4) with a power plant controller is presented. The performance of the detailed benchmark wind power plant model and the aggregated model are compared by means of simulations for the specified test cases. Consequently, the results are summarized and discussed in terms of model accuracy, simulation time and modeling assumptions.

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